## What is claimed is:

1	1. A data structure comprising:
2	a root node, the root node including a number of sequential keys, each key including a
3	first value and a second value, the first and second values of each key defining a
4	range for that key, wherein the ranges of the number of key are non-overlapping
5	and
6	a pointer associated with the root node, the pointer identifying a child node, the child
7	node having a range outside the range of each key in the root node.
1	2. The data structure of claim 1, wherein at least one of the keys of the root
2	node further includes a data element.
1	3. The data structure of claim 1, wherein at least one of the keys of the root
2	node further includes a pointer to an associated data element.
1	4. The data structure of claim 1, wherein the first value includes a lower
2	bound of the range and the second value includes an upper bound of the range.
1	5. The data structure of claim 1, wherein one of the keys of the root node
2	includes a pointer to a set of data elements.

1	6.	The data structure of claim 5, wherein the set of data elements comprises a
2	linked list.	
1	7.	The data structure of claim 5, wherein each data element of the set is
2	associated wit	h the range of the one key.
1	8.	The data structure of claim 5, wherein one data element of the set is
2	further associa	ated with another one of the keys of the root node.
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1	9.	The data structure of claim 5, wherein the set of data elements is
2	prioritized.	
1	10.	The data structure of claim 9, wherein a highest priority data element of
2	the set of data	elements corresponds to a data element having a longest length prefix.
1	11.	The data structure of claim 1, further comprising a temporary node
2	including a nu	umber of keys that is less than a minimum number of keys.
1	12.	The data structure of claim 1, further comprising a temporary key, the
2	temporary key	y having a range overlapping with the range of at least one of the keys in the
3	root node.	

1	13.	The data structure of claim 1, wherein the range of the child node is
2	between the ra	anges of two sequential keys.
1	14.	The data structure of claim 1, wherein the range of the child node is
2	beyond the ra	nge of an end key of the number of keys.
1	15.	The data structure of claim 1, wherein the range of each of the keys
2	corresponds to	o a range of network addresses.
1	16.	The data structure of claim 1, wherein the root node and the child node
2	comprise a B-	Tree data structure.
1	17.	The data structure of claim 1, wherein the data structure is capable of
2	being stored i	n a machine readable medium.
1	18.	The data structure of claim 1, wherein the machine readable medium
2	comprises on	e of a memory device, a carrier wave, an optical storage device, and a
3	magnetic stor	age device.

1	19. A method comprising:
2	storing in a memory a root node, the root node including a number of sequential keys,
3	each key including a first value and a second value, the first and second values of
4	each key defining a range for that key, wherein the ranges of the number of key
5	are non-overlapping; and
6	storing in the memory a pointer associated with the root node, the pointer identifying a
7	child node, the child node having a range outside the range of each key in the root
8	node.
1	20. The method of claim 19, wherein at least one of the keys of the root node
2	further includes a data element.
1	21. The method of claim 19, wherein at least one of the keys of the root node
2	further includes a pointer to an associated data element.
1	22. The method of claim 19, wherein the first value includes a lower bound of
2	the range and the second value includes an upper bound of the range.
1	23. The method of claim 19, wherein one of the keys of the root node includes
2	a pointer to a set of data elements.

1	24.	The method of claim 23, wherein the set of data elements comprises a
2	linked list.	
1	25.	The method of claim 23, wherein each data element of the set is associated
2	with the range	e of the one key.
1	26.	The method of claim 23, wherein one data element of the set is further
2	associated with	th another one of the keys of the root node.
1	27.	The method of claim 23, wherein the set of data elements is prioritized.
1	28.	The method of claim 27, wherein a highest priority data element of the set
2	of data eleme	nts corresponds to a data element having a longest length prefix.
1	29.	The method of claim 19, further comprising storing in the memory a
2	temporary no	de including a number of keys that is less than a minimum number of keys.
1	30.	The method of claim 19, further comprising storing in the memory a
2	temporary ke	y, the temporary key having a range overlapping with the range of at least
3	one of the ke	ys in the root node.

1	31.	The method of claim 19, wherein the range of the child node is between
2	the ranges of two sequential keys.	
1	32.	The method of claim 19, wherein the range of the child node is beyond the
2	range of an end key of the number of keys.	
1	33.	The method of claim 19, wherein the number of sequential keys are stored
2	in contiguous	memory locations of the memory.
1	34.	An apparatus comprising:
2	a memory hav	ving a data structure stored therein, the data structure including
3		a root node, the root node including a number of sequential keys, each key
4		including a first value and a second value, the first and second
5		values of each key defining a range for that key, wherein the ranges
6		of the number of key are non-overlapping, and
7		a pointer associated with the root node, the pointer identifying a child
8		node, the child node having a range outside the range of each key
9		in the root node.
1	35.	The apparatus of claim 34, wherein at least one of the keys of the root
2	node further	includes a data element.

1	36.	The apparatus of claim 34, wherein at least one of the keys of the root
2	node further in	ncludes a pointer to an associated data element.
1	37.	The apparatus of claim 34, wherein the first value includes a lower bound
2	of the range as	nd the second value includes an upper bound of the range.
1	38.	The apparatus of claim 34, wherein one of the keys of the root node
2	includes a poi	nter to a set of data elements.
1	39.	The apparatus of claim 38, wherein the set of data elements comprises a
2	linked list.	••
1	40.	The apparatus of claim 38, wherein each data element of the set is
2	associated wi	th the range of the one key.
1	41.	The apparatus of claim 38, wherein one data element of the set is further
2	associated wi	th another one of the keys of the root node.
1	42.	The apparatus of claim 38, wherein the set of data elements is prioritized.

1	43.	The apparatus of claim 42, wherein a highest priority data element of the	
2	set of data elements corresponds to a data element having a longest length prefix.		
1	44.	The apparatus of claim 34, further comprising a temporary node stored in	
2	the memory,	the temporary node including a number of keys that is less than a minimum	
3	number of ke	ys.	
1	45.	The apparatus of claim 34, further comprising a temporary key stored in	
2	the memory,	the temporary key having a range overlapping with the range of at least one	
3	of the keys in	the root node.	
1	46.	The apparatus of claim 34, wherein the range of the child node is between	
2	the ranges of	two sequential keys.	
1	47.	The apparatus of claim 34, wherein the range of the child node is beyond	
2	the range of a	an end key of the number of keys.	
1	48.	The apparatus of claim 34, further comprising a processing device coupled	
2	with the men	nory.	

1	49. The apparatus of claim 48, wherein the processing device includes logic to	
2	generate the data structure.	
1	50. The apparatus of claim 48, further comprising a set of instructions stored	
2	in the memory that, when executed on the processing device, generate the data structure	
3	in the memory.	
1	51. The apparatus of claim 48, wherein the processing device includes a set of	
2	instructions stored thereon that, when executed on the processing device, generate the	
3	data structure in the memory.	
1	52. An article of manufacture comprising:	
2	a machine accessible medium providing content that, when accessed by a machine,	
3	causes the machine to	
4	store in a memory a root node, the root node including a number of sequential	
5	keys, each key including a first value and a second value, the first and	
6	second values of each key defining a range for that key, wherein the	
7	ranges of the number of key are non-overlapping; and	
8	store in the memory a pointer associated with the root node, the pointer	
9	identifying a child node, the child node having a range outside the range of	

each key in the root node.

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1	53. The arti	icle of manufacture of claim 52, wherein at least one of the keys of
2	the root node further in	ncludes a data element.
1	54. The art	icle of manufacture of claim 52, wherein at least one of the keys of
2	the root node further in	ncludes a pointer to an associated data element.
1	55. The art	icle of manufacture of claim 52, wherein the first value includes a
2	lower bound of the rar	age and the second value includes an upper bound of the range.
1 2		icle of manufacture of claim 52, wherein one of the keys of the rooter to a set of data elements.
1	57. The art	icle of manufacture of claim 56, wherein the set of data elements
2	comprises a linked list	: ,
1	58. The art	cicle of manufacture of claim 56, wherein each data element of the
2	set is associated with	the range of the one key.
1	59. The art	ticle of manufacture of claim 56, wherein one data element of the
2	set is further associate	ed with another one of the keys of the root node.

1	60.	The article of manufacture of claim 56, wherein the set of data elements is
2	prioritized.	
1	61.	The article of manufacture of claim 60, wherein a highest priority data
2	element of the	set of data elements corresponds to a data element having a longest length
3	prefix.	
1	62.	The article of manufacture of claim 52, wherein the content, when
2	accessed, furtl	ner causes the machine to store in the memory a temporary node including a
3	number of key	ys that is less than a minimum number of keys.
1	63.	The article of manufacture claim 52, wherein the content, when accessed,
2	further causes	the machine to store in the memory a temporary key, the temporary key
3	having a range	e overlapping with the range of at least one of the keys in the root node.
1	64.	The article of manufacture of claim 52, wherein the range of the child
2	node is betwe	en the ranges of two sequential keys.

- 1 65. The article of manufacture of claim 52, wherein the range of the child
- 2 node is beyond the range of an end key of the number of keys.
- 1 66. The article of manufacture of claim 52, wherein the number of sequential
- 2 keys are stored in contiguous memory locations of the memory.